

Name Answers.

Date _____

SSE.2 _____

Alg. 2 Demonstration of Understanding- Quadratics 2 Part 3

Find the zeros by completing the square.

$$1. x^2 + 6x + 10 = 0 \quad \left(\frac{b}{2}\right)^2 = \left(\frac{6}{2}\right)^2 = (3)^2 = 9 \quad 2. x^2 + 6x - 7 = 0 \quad \left(\frac{b}{2}\right)^2 = \left(\frac{6}{2}\right)^2 = (3)^2 = 9$$

$$(x^2 + 6x + 9) + 10 - 9 = 0$$

$$(x^2 + 6x + 9) - 7 - 9 = 0$$

$$(x + 3)(x + 3) + 1 = 0$$

$$(x + 3)(x + 3) - 16 = 0$$

$$\sqrt{(x + 3)^2} = \sqrt{-1}$$

$$\sqrt{(x + 3)^2} = \sqrt{16}$$

$$x + 3 = \pm i \quad \boxed{\{-3 + i, -3 - i\}}$$

$$x + 3 = \pm 4 \quad \boxed{\{1, -7\}}$$

3. In two or more sentences, describe the difference of squares property.

The difference of squares property is allowing you to use the info about perfect squares to find the roots. By putting perfect sq.s on both sides & taking sq. root.

4. Find the zeros by applying the difference of squares.

$$y = 9a^2 - 4$$

$$0 = 9a^2 - 4$$

$$\sqrt{4} = \sqrt{9a^2}$$

$$\pm 2 = 3a$$

$$a = \pm \frac{2}{3}$$

$$0 = (3a - 2)(3a + 2) \quad \boxed{\left\{\frac{2}{3}, -\frac{2}{3}\right\}} \quad \begin{aligned} 3a - 2 &= 0 \\ a &= 2/3 \\ 3a + 2 &= 0 \\ a &= -2/3 \end{aligned}$$

5. Find the zeros by applying the difference of squares.

$$y = 16x^2 - 1$$

$$0 = 16x^2 - 1 \quad \sqrt{1} = \sqrt{16x^2}$$

$$\pm 1 = 4x$$

$$x = \pm \frac{1}{4}$$

$$\boxed{\left\{\frac{1}{4}, -\frac{1}{4}\right\}}$$

$$0 = 16x^2 - 1$$

$$0 = (4x - 1)(4x + 1)$$

$$0 = 4x - 1$$

$$0 = 4x + 1$$

$$x = 1/4$$

$$x = -1/4$$

6. State the quadratic formula

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

7. State the discriminant formula

$$b^2 - 4ac$$

8. Describe how to use the discriminant to determine the number and type of roots.

Discriminant value is:	Number of roots	Type of root.
> 0	2	real (rational & irrational)
< 0	2	complex roots
= 0	1	real (rational)

Complete parts a-c for each quadratic equation in #23 & 24..

- Find the value of the discriminant
- Describe the number and type of roots.
- Find the exact solutions by using the Quadratic Formula

9. $2m^2 + 2m - 12 = 0$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2 \pm \sqrt{2^2 - 4(2)(-12)}}{2(2)}$$

$$= \frac{-2 \pm \sqrt{4 + 96}}{4}$$

$$= \frac{-2 \pm \sqrt{100}}{4} \leftarrow \begin{array}{l} \text{a. Discrim} = 100 \\ \text{b. 2 real roots} \end{array}$$

$$= \frac{-2 \pm 10}{4}$$

$$c. \boxed{= \{2, -3\}}$$

10. $x^2 - 10x + 34 = 0$

$$\frac{+10 \pm \sqrt{100 - 4(1)(34)}}{2(1)}$$

$$= \frac{10 \pm \sqrt{-36}}{2} \quad \begin{array}{l} \text{a. Disc.} = -36 \\ \text{b. 2 complex roots} \end{array}$$

$$= \frac{10 \pm 6i}{2}$$

$$c. \boxed{= \{5 + 3i, 5 - 3i\}}$$

Rate your understanding for priority standard SSE.2 and explain what you can do to deepen your understanding of each standard.

SSE.2 1 2 3 4

$$\begin{array}{l} 54 - 54 = 4 \\ 39 - 53 = 3 \\ 29 - 38 = 2 \\ 14 - 27 = 1 \end{array}$$